



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,031	09/30/2003	Robert Z. Bachrach	AM-5609.D1	5409

7590 06/21/2005

Patent Counsel
Applied Materials, Inc.
P.O. Box 450 A
Santa Clara, CA 95052

EXAMINER

CHEN, KIN CHAN

ART UNIT	PAPER NUMBER
----------	--------------

1765

DATE MAILED: 06/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/675,031

Applicant(s)

BACHRACH ET AL.

Examiner

Kin-Chan Chen

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 10, 13-19, 25 and 27 is/are rejected.
- 7) ☒ Claim(s) 4-9, 11, 12, 20-24 and 26 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>102203</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. Updating the status of U.S. Application No. 09/932,396 (the prior application) on page 1 of the specification is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 10, 13-19, 25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frankoski et al. (US 6,344,106; hereinafter "Frankoski").

In a method of jet etching of patterned features in a semiconductor workpiece, Frankoski teaches that a machining etchant fluid may be impinged on a surface of the workpiece. The material may be removed from the surface of the workpiece at an etch rate of at least about 10 microns per minute (col. 2, lines 52-54; col. 3, lines 50-57; col. 4, lines 12-14; examples). Frankoski teaches using high-speed fluid jetting with Reynolds numbers up to 15,000. Hence, it would have been obvious to one with

Art Unit: 1765

ordinary skill in the art that the jetting chemical etchant would also provide mechanical function to physically remove the material while impinging the surface of the substrate, therefore, it is considered to read on applicant's chemical-mechanical jet etching. In addition, the disclosure of Frankoski is not limited the type of feature fabricated on the surface of the workpiece. Hence, it would have been obvious to one with ordinary skill in the art to fabricate at least a three-dimensional feature because they are merely a matter of choices of design depending on product requirement. The substrate may be glass or insulator. The workpiece may be masked and patterned and the material may be only removed from areas not covered by the mask. Frankoski teaches using injectors (so-called nozzles in the instant claims).

The above-cited claims differ from Frankoski by specifying well-known features (such as using dual nozzle in claim 13; workpiece and /or nozzles are rotated, translated, or stationary in claims 15, 16, 17, and 27) to the art of semiconductor device fabrication and using various processing parameters (such as selection of pressures and viscosities of etchant in claim 14). However, same are result-effective variables and commonly determined by routine experiment. The process of conducting routine experimentations (optimizations) so as to produce an expected result is obvious to one of ordinary skill in the art. A person having ordinary skill in the art would have found it obvious to modify Frankoski by performing routine experiments (by using various processing parameters) to obtain optimal result and adding any of same well-known features to same in order to provide their art recognized advantages and produce an expected result.

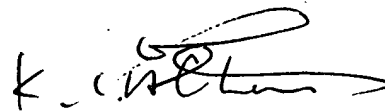
Art Unit: 1765

Allowable Subject Matter

4. Claims 4-9, 11, 12, 20-24, and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kin-Chan Chen whose telephone number is (571) 272-1461. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

June 16, 2005



Kin-Chan Chen
Primary Examiner
Art Unit 1765